PATENT ABSTRACTS OF JAPAN

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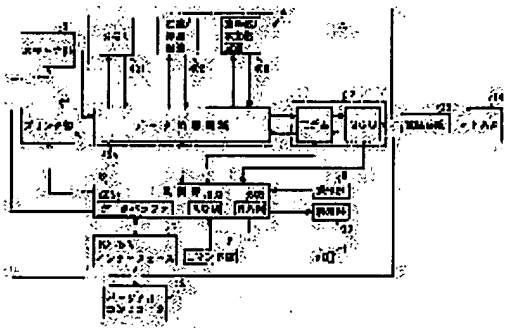
(54) FACSIMILE EQUIPMENT

(57)Abstract:

PURPOSE: To enhance the availability of the communication mode of the facsimile equipment by setting the communication mode fixedly.

CONSTITUTION: A personal computer 12 is connected to a facsimile equipment 1 via an RS-232C interface in a communication enable way. The facsimile equipment 1 has the facsimile mode for normal facsimile communication and the communication mode for data communication to the personal computer 12, and either of the modes is selected by a mode changeover key of an operation section 9. Furthermore, the setting/releasing of the communication mode is implemented based on an AT command from the personal computer 12. When the communication mode is set by the mode changeover key, a control section 6 inhibits the release of the communication mode by the AT command and the communication mode is released only by a release command from the mode changeover key.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] A directions means to be facsimile apparatus equipped with the communicate mode with which a communication device is made possible by connection and communicates data between these communication devices, and to direct a setup/discharge of the above-mentioned communicate mode, A communicate mode setting means to set up the above-mentioned communicate mode based on the command data which direct the mode setting directions from the above-mentioned directions means, or the mode setting from the above-mentioned communication device, A communicate mode discharge means to cancel the above-mentioned communicate mode based on the command data which direct the mode discharge directions from the above-mentioned directions means, or the mode discharge from the above-mentioned communication device, A distinction means to distinguish whether the above-mentioned communicate mode was set up by the above-mentioned directions means, and when the above-mentioned communicate mode is set up by the above-mentioned directions means Facsimile apparatus characterized by having a mode discharge prohibition means to forbid the discharge of the above-mentioned communicate mode based on the command data which direct the mode discharge from the above-mentioned communication device.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the facsimile apparatus connected with communication devices, such as a personal computer, possible [a communication link] through a modem interface.
[0002]
[Description of the Prior Art] In recent years, the so-called FAX modem which can transmit the data on a personal computer to the facsimile apparatus of a remote place through the telephone line can be commercialized, and a facsimile function can be added now to personal computer communications (henceforth personal computer communications) by connecting a personal computer to the telephone line through this FAX modem.
[0003] On the other hand in facsimile apparatus, it has the memory which memorizes a transmitted and received data, and the facsimile apparatus in which intercepting by this memory is possible is commercialized. Since the facsimile apparatus with which the conventional facsimile apparatus was equipped with the above-mentioned memory although use of received data was restricted since received data were outputted to the detail paper on real time can save a transmitted and received data in memory, its availability of a transmitted and received data improves, and it has possibility of enriching the extension of facsimile apparatus.
[0004] If especially facsimile apparatus is equipped with communication facility and a personal computer can be connected possible [a communication link], it will become possible to operate facsimile apparatus as the above-mentioned FAX modem or a printer to a personal computer, and conventionally, facsimile apparatus equipped with this communication facility is not known, and commercialization is not carried out, either.
[0005]
[Problem(s) to be Solved by the Invention] By the way, how to connect a personal computer to facsimile apparatus possible [a communication link] through the above-mentioned RC-232C interface can be considered by equipping facsimile apparatus with for example, a RC-232C interface and the software corresponding to an AT command.
[0006] Since a facsimile function and personal computer communication facility are functions which became independent fundamentally when communication facility is added to facsimile apparatus, it is desirable to form the mode change-over switch which switches the mode (henceforth facsimile mode) in which the usual facsimile function is achieved, and the mode (henceforth the communicate mode) in which the above-mentioned personal computer communications are performed to the control unit of facsimile apparatus.
[0007] On the other hand, the communicate mode is the extension for supporting a personal computer, and since it is considered submode to facsimile mode, it is considered [interrupting during facsimile mode setting and being used temporarily in many cases, and]. If the mode change-over is attained only with the above-mentioned mode change-over switch in this case, it must carry out to the facsimile apparatus arranged in the location comparatively distant to the personal computer, a mode change-over

must be performed, and the operability of a mode change-over will fall remarkably.
[0008] Therefore, also when operability is taken into consideration, and the AT command transmitted from a personal computer is received, it is desirable for the mode change-over between facsimile mode and the communicate mode to be made to be performed. For example, if an AT command is received in facsimile mode, while switching to the communicate mode automatically and enabling interruption of communications processing, after required communications processing is completed, it is made to return to facsimile mode automatically.
[0009] However, if a mode change-over is attained by both command reception from directions by the mode change-over switch, and a personal computer, the mode will be automatically switched against an intention of an operator and the case where availability falls will arise. When the mode switches automatically by command reception from a personal computer in this case, it becomes impossible for example, to carry out quickly [communications processing] and smoothly, since an operator is considered that there is an intention to use facsimile apparatus fixed as a peripheral device of a personal computer when the communicate mode is set up by the mode change-over switch of facsimile apparatus.

[0010] This invention is made in view of the above-mentioned background and a technical problem, a setup of the communicate mode is enabled fixed, and it aims at offering the facsimile apparatus which can be performed quickly [the communications processing by the communicate mode], and smoothly.
[0011]
[Means for Solving the Problem] A directions means to be facsimile apparatus equipped with the communicate mode which connection of a communication device is attained for this invention, and communicates data between these communication devices, and to direct a setup/discharge of the above-mentioned communicate mode, A communicate mode setting means to set up the above-mentioned communicate mode based on the command data which direct the mode setting directions from the above-mentioned directions means, or the mode setting from the above-mentioned communication device, A communicate mode discharge means to cancel the above-mentioned communicate mode based on the command data which direct the mode discharge directions from the above-mentioned directions means, or the mode discharge from the above-mentioned communication device, A distinction means to distinguish whether the above-mentioned communicate mode was set up by the above-mentioned directions means, and when the above-mentioned communicate mode is set up by the above-mentioned directions means It has a mode discharge prohibition means to forbid the discharge of the above-mentioned communicate mode based on the command data which direct the mode discharge from the above-mentioned communication device.
[0012]
[Function] According to this invention, connection of a communication device is attained for facsimile apparatus, and the communication link of data is performed in the communicate mode between the communication devices by which external connection was made. The discharge of the communicate mode based on the command data which direct the mode discharge from the above-mentioned communication device is forbidden, and the above-mentioned communicate mode is canceled by only the mode discharge directions from a directions means, when set up by the mode setting directions from a directions means. Moreover, when the communicate mode is set up based on the command data which direct the mode setting from the above-mentioned communication device, it is canceled based on the command data which direct the communicate mode discharge directions from a directions means, or the mode discharge from the above-mentioned communication device.
[0013]
[Example] Drawing 1 is the block block diagram of the facsimile apparatus concerning this invention. Facsimile apparatus 1 is facsimile the possibility of transmission and reception (henceforth cryptocommunication) of the enciphered data, and G3 type in which high-speed transmission is possible. Moreover, external connection of a personal computer 12 (henceforth a personal computer 12) was attained for facsimile apparatus 1, and it is equipped with the personal computer communication facility which processes according to the command from the connected personal computer 12 besides the usual

facsimile function. In addition, facsimile apparatus is not limited to a G3 type thing, and can apply this invention to the facsimile of the type corresponding to the specification of G4 type and other arbitration.

[0014] The data with which facsimile apparatus 1 was read in the scanner section 2 which reads the manuscript which should be transmitted to a transmitting partner's facsimile (FAX (Facsimile)) 14, and the above-mentioned scanner section 2 (The following, transmit data), the data by which FAX transmission was carried out from FAX14 And the data transmitted from the personal computer 12 by which external connection was made (It is hereafter called received data) (Hereafter) The data-processing section 4 and the telephone line 13 which perform predetermined data processing. [which print calling it commo data etc. on the detail paper] [the printer section 3, the above-mentioned transmitted and received data, and] It consists of the data transmission section 5 which transmits and receives the above-mentioned transmitted and received data, and a control section 6 which controls the drive of the above-mentioned scanner section 2 - the data transmission section 5.
[0015] The above-mentioned control section 6 is equipped with RS-232C interface 7, and the above-mentioned personal computer 12 is connected to facsimile apparatus 1 through this RS-232C interface 7. In addition, an interface will not be limited to the interface of the above-mentioned RS-232C specification, if a personal computer 12 is connectable possible [a communication link].
[0016] While the data buffer 601 for receiving the data transmitted from the above-mentioned personal computer 12 is built in a control section 6 the processing program for performing the above-mentioned facsimile function and personal computer communication facility, and various kinds of problem data (for example, the data about drive conditions, such as the amount of luminescence of the light source of the scanner section 2, and development concentration of the printer section 3, --) RAM (Random Access Memory)603 for performing predetermined data processing according to ROM (Read Only Memory) 602 and the above-mentioned processing program with which the data about messages, such as warning and operating procedure, etc. were recorded is built in.
[0017] It is standardized by an AT command system and EIA (U.S. Electronic Industries Association), the communications program which can interpret the command system advised as a class 1 command system and a class 2 command system is carried in the above ROM 602, and facsimile apparatus 1 is controlled by the command system of either the AT command system from the above-mentioned personal computer 12, a class 1 command system and a class 2 command system. In addition, a command system is not limited to the above-mentioned thing. Whenever a command system is newly standardized in consideration of the versatility of the communication facility of facsimile apparatus 1, it is good to equip the command system concerned.
[0018] The command switch 8 for the above-mentioned command system selection (SW) is formed in facsimile apparatus 1, and it can set now to a desired command system by operating this command SW8. If a command SW8 consists of a DIP switch and the configuration bit of this DIP switch is set to the code corresponding to each above-mentioned command system, this code information will be inputted into the above-mentioned control section 6, and it will be set as the command system as which the communication link command system with a personal computer 12 was specified by the command SW8.

[0019] Moreover, facsimile apparatus 1 is equipped with the control unit 9 which consists of key switches, such as a ten key and an one-touch key, the display 10 which consists of LCD (Liquid Crystal Display) and LED (Light Emitted Diode), and a loudspeaker 11, and the control signal of the above-mentioned control unit 9, a display 10, and a loudspeaker 11 is outputted and inputted by the above-mentioned control section 6.
[0020] The above-mentioned scanner section 2 is equipped with the automatic manuscript conveyance section which conveys the set manuscript, the image pick-up section which consists of CCD (Charge Coupled Device) Rhine image sensors, and the image-processing section, carries out the relative scan (a scan) of the above-mentioned image pick-up section to a manuscript, and after it performs predetermined image processings, such as level amendment, gamma amendment, and A/D conversion, it outputs the data which read and read a manuscript image in the conveyance direction (line writing

direction of a manuscript) per Rhine to the data-processing section 4.
[0021] The light-emitting part which the above-mentioned printer section 3 changes into a laser beam the modulating signal generated based on the configuration data of the image (henceforth a print image) which should be printed, and is outputted, The sensitization section which forms the latent image of a print image by the laser beam irradiated from the above-mentioned light-emitting part, It consists of laser beam printers equipped with the fixing section fixed to the imprint section and the recording paper which imprint and carry out image formation of the development section which actualizes the latent image of the print image formed in this sensitization section, and the actualized print image to the recording paper in the print image by which imprint formation was carried out.
[0022] The above-mentioned data-processing section 4 consists of encryption / a plaintext-ized circuit 403 carry out the encryption of compression/expanding circuit 402 which performs the compression and expanding of memory 401 and data which memorizes a transmitted and received data, and transmit data, and plaintext-ization of received data, and a data-processing circuit 404 control processing of above-mentioned compression/expanding, the above-mentioned above-mentioned compression/expanding of a transmitted and received data, coding/decryption, and encryption / plaintext-izing if needed to a transmitted and received data.
[0023] The standard manuscript of for example, A4 size is a bulk memory memorizable about 100 abbreviation, and memory 401 is for enabling coincidence reception, confidential reception, reservation transmission, etc. under transmission and reception. Compression/expanding circuit 402 performs compression of transmit data, and expanding of received data based on the data compression method of V.42bis advice of CCITT (Consulting Committee of International Telegraph & Telephone).
[0024] Encryption / plaintext-ized circuit 403 performs a data encryption and plaintext-ization using the predetermined cryptographic key set up beforehand. Facsimile apparatus 1 has the cryptocommunication function which enciphers data according to a substitution type code format, and is transmitted and received. Above-mentioned encryption / plaintext-ized circuit 403 will change into a plaintext the received data which changed the transmit data into the code per word using this cryptographic key, and were enciphered per word, if a transmitted and received data and a cryptographic key are inputted from the data-processing circuit 44 that cryptocommunication should be carried out.
[0025] The above-mentioned cryptographic key is registered into the cryptographic key table prepared in RAM603 in a control section 6 by the user. Table 1 shows an example of the above-mentioned cryptographic key table. The cryptographic key table consists of cryptographic keys which consist of code No. and a numeric value of 10 figures. Code No. is equivalent to index No. of a code table, and shows that ten cryptographic keys can be registered in this table. A user can register the numeric value of the arbitration of 10 figures into one of code No. as a cryptographic key, and has come to be able to do modification and deletion of a cryptographic key if needed. in addition, this table -- setting -- code No. -- 3 and 9 are in the condition of not registering.
[0026]
[Table 1]

No.	暗　号　鍵
1	0 1 2 3 4 5 6 7 8 9
2	1 1 1 2 2 2 3 3 3 4
3	
4	9 8 5 6 1 2 4 3 8 5
:	: :
:	: :
9	
10	1 4 6 7 7 6 4 1 3 5

[0027] The data-processing circuit 404 performs predetermined data processing to a transmitted and

received data and commo data based on the control signal of the above-mentioned control section 6, and performs print-out to the data transmission or the recording paper of the data concerned.
[0028] For example, when carrying out facsimile transmission of the contents of a manuscript, the data-processing circuit 404 once memorizes the data of the manuscript image read by the above-mentioned scanner section 2 in memory 401. If the timing signal of transmitting initiation is inputted by the control section 6, after the data-processing circuit 404 enciphers the data encoded according to the code directions from a control section 6 after reading the transmit data from memory 401 and compressing with predetermined compressibility by compression/expanding circuit 402 by encryption / plaintext-ized circuit 403, it will be outputted to the data transmission section 5.
[0029] When carrying out facsimile transmission of the commo data transmitted from the personal computer 12, the above-mentioned commo data is sent out to the data-processing circuit 404 through a control section 6, and after the data-processing circuit 404 enciphers this commo data by encryption / plaintext-ized circuit 403 according to the encryption directions from a control section 6, it is outputted to the data transmission section 5.
[0030] Moreover, when performing facsimile reception, the data-processing circuit 404 once memorizes the data received by the above-mentioned data transmission section 5 in memory 401. If the timing signal of a recording start is inputted by the control section 6, the data-processing circuit 404 will be outputted to the printer section 3, after it reads received data from memory 401, and these received data plaintext-ize by encryption / plaintext-ized circuit 403 according to the plaintext-ized directions from a control section 6 and elongating at the predetermined rate of expanding by compression/expanding circuit 402.
[0031] When it prints out the commo data transmitted from the personal computer 12 on the detail paper, the above-mentioned commo data is outputted to the printer section 3 through a control section 6 and the data-processing circuit 404.
[0032] The above-mentioned data transmission section 5 is a modem (it consists of MODEM (modulator/demodulator)501 and NCU (network control unit)502 which performs selection of a distant office, a line connection, etc.) which carries out the interconversion of the digital data to analog data.
[0033] The above-mentioned control unit 9 performs a setup of registration of the input of FAX No. of the transmitting partner at the time of performing facsimile transmission, directions of initiation/halt of facsimile transmission, registration / modification / deletion of the above-mentioned cryptographic key, an one-touch key, or compaction No., and confidential reception, and various kinds of modes in addition to this and a setup of conditions.
[0034] Registration of the above-mentioned one-touch key or compaction No. is for being made to perform facsimile transmission simply and quickly by inputting one-touch key No. or compaction No. about the transmitting partner who registers the specific transmitting partner into one-touch key No. or compaction No. beforehand, and was registered. In registration (henceforth communications-partner registration) of an one-touch key or compaction No., corresponding to one-touch key No. or compaction No., a transmitting partner's name, FAX No., and code No. are registered, and the contents of registration are memorized by the communication link place table of RAM603 built in the control section 6.
[0035] Table 2 shows an example of a communication link place table. One-touch key No. of this table corresponds to the number (actuation number at the time of facsimile transmission) of the one-touch key 16 (drawing 2 , reference) prepared in the control unit 9, and a transmitting partner can register it now into ten one-touch keys by this example. in this table, one-touch key No.2, and 4, 7 and 8 are in the condition of not registering, and one-touch key No.1, and 5, 6 and 9 specify and register cryptocommunication -- having -- one-touch key No. -- 3 and 10 are registered, without specifying cryptocommunication.
[0036] Cryptographic key No. corresponds to code No. of the cryptographic key table (Table 1, reference) mentioned above, for example, to the transmitting partner "ABCD" of one-touch key No.1, data are enciphered by the cryptographic key (= 0123456789) corresponding to code No.1, and it is transmitted and received. In addition, compaction No. as well as the table of Table 2 is registered, in this

case, it replaces with one-touch key No., and a transmitting partner's name, FAX No., and code No. are registered corresponding to abbreviated dialing No.

[0037]

[Table 2]

No.	送信相手	特殊No.	FAX No.
1	ABCD	1	06-764-1111
2			
3	××××		03-3456-7890
4			
5	ΔΔΔΔ	3	06-123-4567
6	abcd	7	06-987-6543
7			
8			
9	ΔΔ××	8	044-123-9876
10	WXYZ		078-881-1212

[0038] The above-mentioned display 10 displays the necessity of the existence of a communication link error, setting mode, receiving image quality, memory intercepting, and a maintenance etc. with an indicator while displaying various information, such as information on a transmitting partner's name in facsimile transmission, FAX No., the existence of cryptocommunication, a line-connection condition, and a send state, the contents of an input in cryptographic key registration or communications-partner registration, a condition of the cryptographic key in the facsimile reception by cryptocommunication do not register, and a communication link condition with a personal computer 12, by text.

[0039] Moreover, a loudspeaker 11 emits an alarm or tells a part of above-mentioned text with voice. For example, an alarm tone is generated at the time of termination of facsimile transmission, and initiation of facsimile reception. Moreover, when the cryptographic key corresponding to the time of the facsimile transmission by cryptocommunication or facsimile reception is not registered, cryptographic key non-registered an alarm whistle sound or a warning message is pronounced.

[0040] Drawing 2 is drawing showing an example of the control unit prepared in the control panel of facsimile apparatus, and a display.

[0041] Ten one-touch keys 16 are arranged at the right-hand-side section of a control panel 15. The number given to each one-touch key 16 shows one-touch key No. The plotting board 18 which consists of LCD which displays text on the left part upper part of a control panel 15 is arranged, and two or more annunciators 17 which become the vertical section of this display version 18 from LED, and the pronunciation aperture 19 of a loudspeaker are arranged. Furthermore, the selection key 20, the ten key 21, the function key 22, and the key of a start / stop key 23 grade are arranged at these lower parts.

[0042] The above-mentioned one-touch key 16 is a multifunctional key, and can input now text, such as a phase hand name in registration of an others and one-touch key or compaction No. [input / of one-touch key No.] The input of text is attained by changing the input mode of the one-touch key 16 by FAKUSHONKI 203 in the above-mentioned selection key 20.

[0043] The above-mentioned annunciator 17 will be turned on, if two or more LED displays are prepared and will be in the condition of corresponding, corresponding to for example, a communication link error, memory reception, confidential reception, a maintenance stage, etc. Moreover, two or more LED displays are prepared corresponding to the contents of selection of the selection key 201,202, and LED corresponding to the contents chosen by this selection key 201,202 is turned on.

[0044] The information for dozens of characters covers two lines, and the above-mentioned plotting board 18 is made possible by the display. Two or more dots are arranged in the shape of a matrix in each character position, a predetermined dot is made to turn on, and the alphabetic character of arbitration is

displayed.
[0045] The above-mentioned selection key 201,202 is for performing level selection of the concentration of for example, receiving image quality, the gradation of halftone, etc., and a setup in various modes, and making a change of the input mode of a multifunctional key etc. For example, by the selection key 201,202, the gradation level of the halftone of linear density, a photograph, etc. is adjusted. Moreover, various modes, such as an automatic mode change-over from the mode (henceforth communications-partner register mode) for performing the mode (henceforth cryptographic key register mode) for registering a cryptographic key with a function key 203 and communications-partner registration and the communicate mode to between facsimile modes, are set up.
[0046] The automatic mode change-over in facsimile mode from the communicate mode is for performing an automatic change-over in facsimile mode from the communicate mode, and preventing failure of the facsimile reception by the change-over mistake to facsimile mode from the communicate mode, after temporary processing (for example, processing which uses facsimile apparatus 1 as a printer) is completed in the personal computer communications processing in the communicate mode. If an automatic mode change-over is directed with a function key 203, the automatic change-over in facsimile mode from the communicate mode will be set.
[0047] A ten key 21 is for inputting a transmitting partner's numeric values and code numbers, such as FAX No., code No., cryptographic key, and compaction No.
[0048] A function key 22 is a key for performing various functions, such as a setup in the mode (henceforth the communicate mode) which communicates for example, between the mode (henceforth facsimile mode) in which intercepting by memory 401 and transmission and reception by the usual facsimile are performed, or a personal computer 12, and a pause/redial.
[0049] A start / stop key 23 directs transmitting initiation and a transmitting termination, when inputting FAX No. with a ten key 21 and carrying out facsimile transmission. If a transmitting partner's FAX No. is inputted automatically and a circuit is connected, without operating a start key 23 when a transmitting partner is specified by the one-touch key or compaction No., facsimile transmission will be started automatically.
[0050] It is for return and RS-232C interface 7 to connect a personal computer 12 to drawing 1 with a RS-232C cable. Warning will be emitted by a display 10 and the loudspeaker 11, if the connection checking circuit which checks a connection condition (condition of whether to be able to communicate) with the personal computer 12 under the time of a setup of the communicate mode and setup is prepared in a control section 6 and the abnormalities in connection with a personal computer 12 are detected.
[0051] Drawing 3 is the circuit diagram showing an example of the above-mentioned connection checking circuit. The connection checking circuit shown in this drawing detects the abnormalities of a connection condition with a personal computer 12 by checking the signal (henceforth a /DTR signal) inputted from the /DTR terminal of the RC-232C connector 71 in RS-232C interface 7.
[0052] If pull-up is carried out high-level through resistance R1, and a personal computer 12 is connected to this RC-232C connector 71 through a RS-232C cable and a personal computer 12 always starts the /DTR terminal of the RC-232C connector 71, the above-mentioned /DTR terminal will be reversed by the low level. That is, a /DTR signal will become high-level if it will be set to a low level if the communication link with a personal computer 12 is attained, and the communication link with a personal computer 12 becomes impossible. Therefore, the abnormalities of a connection condition with a personal computer 12 are detected by checking level change of a /DTR signal. In addition, as for the condition of a /DTR signal, a low level and high level may be reverse.
[0053] In this drawing, the RS receiver 25 changes the level of the above-mentioned /DTR signal, and the output signal is substantially equivalent to a /DTR signal. A gate circuit 26 is a circuit for incorporating the /DTR signal outputted by the above-mentioned RS receiver 25 for the DATA terminal of the central arithmetic circuit (henceforth CPU) 28 of a control section 6 at the time of a communicate mode setup. A gate circuit 26 will output the /DTR signal inputted into the input terminal IN to an output terminal OUT, if a timing signal is inputted into gate terminal G.
[0054] It is made as [input / from the RD-RS terminal of CPU28 / into above-mentioned gate terminal

G / the taking-in timing signal of a /DTR signal]. If the communicate mode is set up by the above-mentioned mode exchange key 221, CPU28 will send out a taking-in timing signal from a RD-RS terminal, will incorporate a /DTR signal, and will distinguish whether the connection condition of a personal computer 12 is normal from the level of this /DTR signal. And if a connection condition with a personal computer 12 is distinguished from abnormalities, the warning message which shows the abnormalities in connection of a personal computer 12 will be displayed on a display 10, and the alarm of the abnormalities in connection will be generated from a loudspeaker 11.

[0055] Drawing 5 is a flow chart which performs the abnormality check in connection of the personal computer 12 when the communicate mode is set up.

[0056] In the condition that facsimile apparatus 1 is set as facsimile mode, if the communicate mode is directed with a function key 203 (it is YES at step S1), a taking-in timing signal will be inputted into gate terminal G of a gate circuit 26, and a /DTR signal will be incorporated (step S2).

[0057] And the connection condition of a personal computer 12 is distinguished from the level of a /DTR signal (step S3), and if the connection condition of a personal computer 12 is normal (it is YES at step S3), the communicate mode will be set up and will carry out a return (step S4). A return is carried out, after generating an alarm whistle sound from a loudspeaker 11 and performing warning of the abnormalities of the connection condition of a personal computer 12, while displaying the warning message shown in a display board 18 at drawing 6 , when the connection condition of a personal computer 12 was unusual (it is NO at step S3) (step S5). In addition, the above-mentioned abnormality warning in connection may be made to perform only voice or either of the displays.

[0058] D flip-flop (henceforth D-FF) 27 is a circuit for inputting into the /INT terminal of CPU28 level change of the /DTR signal outputted by the above-mentioned RS receiver 25 during a communicate mode setting period, and checking a connection condition with the personal computer 12 in a communicate mode setting period. The RS receiver's 25 output signal is inputted into the CLK terminal of D-FF27, the output signal of the /Q terminal of D-FF27 is inputted into the /INT terminal of CPU28, and D terminal and PR terminal of D-FF27 are set up high-level. Moreover, the /RESET signal (signal which resets the /Q terminal output of D-FF27) outputted from the /RESET terminal of CPU28 is reversed, and it is inputted into the CLR terminal of D-FF27.

[0059] Drawing 4 is a timing diagram for explaining actuation of above-mentioned D-FF27. First, after outputting a /RESET signal to D-FF27 from CPU28 (drawing 4 , A point) and resetting the /Q terminal output of D-FF27, the check of a connection condition with the personal computer 12 in a communicate mode setting period is started. If the power source of a personal computer 12 will be turned off or the communication link with a personal computer 12 will be in disabling by open circuit of a telecommunication cable etc. during a communicate mode setting period, a /DTR signal changes from a low level high-level, and the reversal signal (low level) of D terminal input in the standup timing (drawing 4 , B point) of this /DTR signal will be outputted from a /Q terminal, and will be inputted into the /INT terminal of CPU28. When the input signal of a /INT terminal was reversed from high level to a low level, CPU28 detects that the personal computer 12 changed from the condition which can be communicated to communication link disabling, and emits warning to a display 10 and a loudspeaker 11.

[0060] Drawing 7 is a flow chart which checks the abnormalities in connection of the personal computer 12 under communicate mode setup.

[0061] If the communicate mode was directed with the function key 203 and the communicate mode was set (it is YES at step S10), after inputting a /RESET signal into D-FF26 and resetting a /Q terminal output, the check of the /DTR signal outputted from ** / Q terminal is started (step S11).

[0062] Then, if it was distinguished from level change of a /DTR signal whether the abnormalities in connection of a personal computer 12 occurred (step S12) and the abnormalities in connection have occurred (it is YES at step S12), after warning of the abnormalities of the connection condition of a personal computer 12 is performed by a display and the alarm whistle sound from a loudspeaker 5 of the warning message to the above-mentioned display board 18 (step S13), it will shift to step S14. If the abnormalities in connection have not occurred (it is NO at step S12), the above-mentioned step S13 is

skipped and it shifts to step S14.
[0063] Then, if it is distinguished whether facsimile mode is directed with the function key 203 (step S14) and facsimile mode is directed (it is YES at step S14), facsimile mode will be set and it will end (step S15). If it is distinguished from the level condition of a /DTR signal whether the abnormalities in connection are canceled if facsimile mode is not directed (it is NO at step S14) (step S16), and the abnormalities in connection are not canceled (it is NO at step S16), warning of return and the abnormalities in a connection condition is continued by step S13.
[0064] On the other hand, if the abnormalities in connection are canceled (it is YES at step S16), warning of the abnormalities in a connection condition will be stopped (step S17), and the abnormality check in connection of the personal computer 12 under return and above-mentioned communicate mode setup will be performed to step S10.
[0065] Although the /DTR signal was supervised and the abnormalities of the connection condition of a personal computer 12 were always checked during the setting period of the communicate mode in the above-mentioned example, a /DTR signal is checked periodically and you may make it check the abnormalities of the connection condition of a personal computer 12. In this case, in drawing 3 , it is good to input a taking-in timing signal into gate terminal G of a gate circuit 26 a predetermined period, to incorporate a /DTR signal for the DATA terminal of CPU28 after a setup of the communicate mode, and to check the level of ** / DTR signal. By this approach, in drawing 3 , since D-FF27 becomes unnecessary, there is an advantage to which a connection checking circuit becomes easy.
[0066] Drawing 8 is a flow chart which checks the abnormalities in connection of a personal computer 12 periodically during the setting period of the communicate mode.
[0067] In drawing 7 , this drawing inserts step S10-1-S10-4 which count a predetermined period between step S10 and step S11' while changing "/DTR signal check initiation" of step S11 into "the check of a /DTR signal" (step S11').
[0068] When the communicate mode was directed with the function key 203 and the communicate mode was set (it is YES at step S10), while the timer Tm built in CPU28 was reset, after counted value Tc is set (step S 10-1, S10-2), the count of Timer Tm is started (step S 10-3).
[0069] And if time amount Tc is clocked by Timer Tm (it is YES at step S10-4), a taking-in timing signal will be inputted into gate terminal G of a gate circuit 26, a /DTR signal will be incorporated (step S11'), and it will be distinguished from the level of ** / DTR signal whether the abnormalities in connection of a personal computer 12 occurred (step S12).
[0070] If the abnormalities in connection of a personal computer 12 have occurred (it is YES at step S12) Warning of the abnormalities of the connection condition of a personal computer 12 is performed until the abnormalities in connection are canceled (loop formation of steps S12-D16). If the abnormalities in connection are solved (it is YES at step S16), warning of the abnormalities in connection will be stopped (step S17), and the abnormality check in connection of the personal computer 12 under return and above-mentioned communicate mode setup will be performed to step S10. Moreover, if facsimile mode is directed during warning of the abnormalities in connection, facsimile mode will be set (step S15) and it will end.
[0071] Next, the registration processing in communications-partner register mode is explained using the flow chart of drawing 9 .
[0072] If communications-partner register mode is directed with a function key 203 (it is YES at step S20), communications-partner register mode will be set (step S21). Then, if one-touch key No. or compaction No. was inputted, or no is distinguished (steps S22 and S23) and one-touch key No. or compaction No. is inputted (it is YES at step S22 or step S23), it will be distinguished whether No. which searched the communication link place table of RAM603, and was inputted is already registered (step S24).
[0073] If inputted No. has not been registered (it is YES at step S24), it will shift to step 26 and new registration will be processed. That is, after the input of a phase hand's name, FAXNo., code No., confidential Box No., etc. is required of an operator one by one and these inputs are completed (it is YES at steps S26-S29), the contents of an input are displayed on a display 10 for a check (step S30). In

addition, since code No. and confidential Box No. are contents set up if needed, if No. is nonappointed and is inputted, it will be judged as what does not perform cryptocommunication and confidential reception, and the contents of registration will be set up.

[0074] It is continued until there are registration directions from an operator, and the above-mentioned contents display is in the correctable condition in the meantime (loop formation of steps S26-S31). And if registration directions were inputted from the operator, after the contents of the set-up phase hand will be registered into No. to which the communication link place table of RAM603 corresponds (step S32), it shifts to step S36.

[0075] On the other hand, if inputted No. is registered (it is YES at step S24), it will shift to step S33 and modification of the contents of registration or processing of deletion will be performed. That is, it registers with No[to which it will shift to step S26 if the contents of processing of modification of the contents of registration or deletion are required of the operator after the contents of registration were displayed on the display 10 (step S33) and modification of the contents of registration is directed with a function key 203, and the same processing as the time of new registration is performed, and the communication link place table of RAM603 corresponds / the contents of modification]. (steps S26-S32). Moreover, if deletion of the contents of registration is directed with a function key 203, after all the contents of registration are deleted (step S35), it will shift to step S36.

[0076] Then, if it is distinguished whether discharge of communications-partner register mode is directed (step S36) and discharge of communications-partner register mode is directed (it is YES at step S36), after communications-partner register mode is canceled (step S37), it will return to step S20. If discharge of communications-partner register mode is not directed (it is NO at step S36), the registration processing in return and above-mentioned communications-partner register mode is continued to step S22.

[0077] Next, the registration processing in cryptographic key register mode is explained using the flow chart of drawing 10 . If cryptographic key register mode is directed with a function key 203 (it is YES at step S40), cryptographic key register mode will be set (step S41). Then, if the input of a password is required of an operator and a right password is entered from an operator (it is YES at step S42 and step S43) If cryptographic key registration is attained, then the input of code No. is required of an operator and code No. is inputted (it is YES at step S44), it will be distinguished whether code No. which searched the cryptographic key table of RAM603 and was inputted is already registered (step S45).

[0078] If inputted code No. has not been registered (it is YES at step S45), it will shift to step 46 and new registration will be processed. That is, if the input of a cryptographic key was required of the operator and the cryptographic key was inputted (it is YES at step S46), after this cryptographic key will be registered into code No. to which the cryptographic key table of RAM603 corresponds (step S47), it shifts to step S51.

[0079] On the other hand, if inputted code No. is registered (it is YES at step S45), it will shift to step S33 and modification of the contents of registration or processing of deletion will be performed. That is, if modification of the contents of registration or the contents of processing of deletion is required of an operator (step S49) and modification of the contents of registration is directed with a function key 203 after the contents of registration are displayed on a display 10 (step S48), it will shift to step S46 and the newly inputted cryptographic key will be registered into code No. to which the cryptographic key table of RAM603 corresponds (steps S46 and S47). Moreover, if deletion of the contents of registration is directed with a function key 203, after a registered cryptographic key is deleted (step S50), it will shift to step S51.

[0080] Then, if it is distinguished whether discharge of cryptographic key register mode is directed (step S51) and discharge of cryptographic key register mode is directed (it is YES at step S51), after cryptographic key register mode is canceled (step S52), it will return to step S40. If discharge of cryptographic key register mode is not directed (it is NO at step S51), registration processing of return and an above-mentioned cryptographic key is continued to step S44.

[0081] As mentioned above, since registration of a communications partner, modification, and actuation of deletion are performed independently with registration of a cryptographic key, modification, and

actuation of deletion, it can carry out easily [actuation of communications-partner register mode and cryptographic key register mode], and easily.
[0082] For example, registration of code No. can be performed in registration or modification of an one-touch key or compaction No., without registering the cryptographic key to the code No. concerned, also when the cryptographic key corresponding to inputted code No. is not registered. Moreover, in deletion of a cryptographic key, the cryptographic key of code No. specified without deleting code No. registered into the one-touch key concerned or compaction No. also when code No. which carried out deletion assignment is registered into an one-touch key or compaction No. can be deleted.
[0083] In addition, when an one-touch key or compaction No. performs cryptocommunication and the cryptographic key corresponding to code No. is not registered, cryptographic key non-registered warning is made at the time of the cryptocommunication concerned so that it may mention later, and code registration is attained according to an operator's selection.
[0084] Next, transceiver processing of the data in facsimile mode is explained using the flow chart of drawing 11 and drawing 12 .
[0085] By initial setting at the time of starting, facsimile mode is set up and, as for facsimile apparatus 1, the communicate mode is set up if needed. Drawing 11 and drawing 12 are processings in case facsimile apparatus 1 is set as facsimile mode.
[0086] In facsimile mode, if it will shift to step 62 and processing of facsimile transmission will be performed, if a manuscript is set (it is YES at step S60), and FAXNo. of self is called (it is YES at step S61), it will shift to step S90 and processing of facsimile reception will be performed.
[0087] In facsimile transmission, a phase hand's input is required of an operator (step S62). If a phase hand is inputted (it is YES at step S62), when it is not an input it is distinguished whether it is an input by one-touch key No. or compaction No. (step S63), and according to one-touch key No. or compaction No., That is, when a phase hand's FAX No. is inputted by the ten key 21, the usual communication link (usually henceforth a communication link) which does not encipher NO) and data at the (step S63 is set (step S68), and it shifts to step S70.
[0088] When one-touch key No. or compaction No. is inputted, it is distinguished whether the one-touch key in YES) and RAM603 or the registration table of compaction No. is searched with the (step S63, and the communications partner is registered (step S64). If communication link ****** is not registered (it is NO at step S64), it shifts to step S77 and communications-partner processing in which it does not register is performed.
[0089] If it shifts to step S77, communications-partner non-registered warning will be performed first. This warning is performed by displaying messages, such as "two SHINAITEGA settee SARETEIMASEN", on a display 9 while generating an alarm whistle sound from a loudspeaker 5. Then, if it is distinguished from an operator whether communications-partner register mode was directed with the function key 203 (step S78) and there are no directions of communications-partner register mode (it is NO at step S78), it will return to step 62.
[0090] If there are directions of communications-partner register mode (it is YES at step S78), communications-partner register mode is set up (step S79), and after registration processing in the communications-partner register mode mentioned above is performed (step S80), it will return to step 64.
[0091] If the communications partner is registered (it is YES at step S64), it is distinguished whether code No. is set up further (step S65) and code No. is not set up (it is NO at step S65), it shifts to step S69 and a communication link is usually set. If code No. is set up (it is YES at step S65), it will be checked whether the cryptographic key table in RAM603 is searched, and the cryptographic key is registered (step S66).
[0092] And if the cryptographic key is registered (it is YES at step S67), cryptocommunication is set (step S68), it shifts to step 70 and the cryptographic key is not registered (it is NO at step S67), it shifts to step S81 and cryptographic key processing in which it does not register is performed.
[0093] If it shifts to step S81, cryptographic key non-registered warning will be performed first. This warning is performed by displaying messages, such as "ANGOUKA G settee SARETEIMASEN", on a

display 9 while generating an alarm whistle sound from a loudspeaker 5. Then, if it is distinguished from an operator whether the communication link was usually directed with the function key 203 (step S82) and a communication link is usually directed (it is YES at step S82), after a communication link is usually set (step S83), it will shift to step 70 and facsimile transmitting processing will be performed.
[0094] Usually, if a communication link is not directed (it is NO at step S82), it is further distinguished from an operator whether cryptographic key register mode was directed with the function key 203 (step S84). If there are no directions of cryptographic key register mode (it is NO at step S84), to step 62 Return, If there are directions of cryptographic key register mode (it is YES at step S84), cryptographic key register mode will be set up (step S85). After registration processing in the cryptographic key register mode mentioned above is performed (step S86), cryptocommunication is set (step S87), it shifts to step 70, and facsimile transmitting processing is performed.
[0095] If it shifts to step S70, NCU502 will be connected to a transmitting partner's FAX14 through the telephone line 13 (step S70), and facsimile transmission of a manuscript will be started. That is, a manuscript image is read by the scanner section 2 (step S71), and coding of reading data (transmit data) is performed by the data-processing section 4 (step S72). Then, it is distinguished whether cryptocommunication is set or not (step S73), transmit data is enciphered according to predetermined cryptographic algorithm using the cryptographic key corresponding to code No. to which cryptocommunication is set if the set is carried out (it is YES at step S73) (step S74), and it is transmitted to a phase hand's FAX14 through the data transmission section 5 and the telephone line 13 (step S75). Transmit data is transmitted to a phase hand's FAX14, without cryptocommunication performing the above-mentioned encryption processing, if the set is not carried out (it is NO at step S73) (step S75).
[0096] Then, if it is distinguished whether there is any manuscript which should be transmitted (step S76) and there is a manuscript (it is YES at step S76), transmitting processing of return and the following manuscript will be performed to step S71. And if a manuscript is lost (it is NO at step S76), it will return to step 60 noting that processing of facsimile transmission is completed.
[0097] In facsimile reception, NCU502 is connected to a receiving partner's FAX14 through the telephone line 13 (step S90), reception of the data transmitted from this FAX14 is performed (step S91), and the received data are once memorized by memory 401 (step S92).
[0098] Then, it is distinguished from a receiving partner whether it is what received data depend on cryptocommunication (step S93), if it is not cryptocommunication (it is NO at step S93), a communication link will usually be set (step S97), it will shift to step S98, and print processing of received data will be performed. If it is cryptocommunication (it is YES at step S93), it will be checked whether the cryptographic key table in RAM603 is searched, and the cryptographic key is registered (step S94).
[0099] And if the cryptographic key is registered (it is YES at step S95), cryptocommunication is set (step S96), it shifts to step 98, print processing of received data is performed and the cryptographic key is not registered (it is NO at step S92), it shifts to step S104 and cryptographic key processing in which it does not register is performed.
[0100] If it shifts to step S104, cryptographic key non-registered warning will be performed first. This warning is performed by displaying messages, such as "ANGOUKA G settee SARETEIMASEN", on a display 9 while generating an alarm whistle sound from a loudspeaker 5. Then, if it is distinguished from an operator whether cryptographic key register mode was directed with the function key 203 (step S105) and there are no directions of cryptographic key register mode (it is NO at step S105), it will return to step 60, without performing print processing of received data.
[0101] If there are directions of cryptographic key register mode (it is YES at step S105), cryptographic key register mode is set up (step S106), and after registration processing in the cryptographic key register mode mentioned above is performed (step S107), it will be distinguished from an operator whether the print of received data was directed with the function key 203 (step S108). If step 62 has return and print directions, without performing print processing of received data if there are no print directions (it is NO at step S108) (it is YES at step S108), cryptocommunication will be set (step S109),

it will shift to step 98, and print processing of received data will be performed.
[0102] If it shifts to step S98, received data will be read from memory 401. Then, if it is distinguished whether cryptocommunication is set or not (step S99) and cryptocommunication is set (it is YES at step S99), after plaintext-ization of received data is performed by the data-processing section 4 (step S100), a decryption will be performed to data (step S101). If cryptocommunication is not set (it is NO at step S99), a decryption of data is performed, without performing the above-mentioned plaintext-ized processing (step S101).
[0103] Then, received data are outputted to the printer section 3, and are printed on the recording paper (step S102). If it is distinguished whether received data are completed (step S103) and received data are not completed after print-out of the received data for 1 page is completed (it is NO at step S103), print-out of the received data of return and the following page is performed to step S102. And after print-out of all received data is completed (it is YES at step S103), it returns to step 62 noting that facsimile reception is completed.
[0104] As mentioned above, since communications-partner non-registered warning is performed and a communications partner can be registered at the time of the facsimile transmission concerned when facsimile transmission is performed to an one-touch key or compaction No. in the condition that the communications partner is not registered, at the time of transmission and reception of the data in facsimile mode, even if the communications partner is not beforehand registered into an one-touch key or compaction No., facsimile transmission can be easily performed by easy actuation.
[0105] Moreover, since cryptographic key non-registered warning is performed and a cryptographic key can be registered at the time of transmission and reception of the data concerned when transmission and reception of the data based on facsimile mode are performed in the condition that the cryptographic key is not registered in cryptocommunication, even if the cryptographic key is not registered beforehand, the data based on cryptocommunication can be transmitted by easy actuation and received.
[0106] Moreover, since it usually switches to a communication link and has come to be able to perform facsimile transmission when cryptocommunication **** facsimile transmission is performed in the condition that the cryptographic key is not registered, facsimile transmission can be performed by easier actuation.
[0107] Next, the mode change between facsimile mode and the communicate mode is explained.
Drawing 13 is a flow chart which shows the mode change-over control between facsimile mode and the communicate mode.
[0108] The communicate mode will be set if an AT command is transmitted from directions or the personal computer 12 of the communicate mode by the mode exchange key 221 (it is YES at step S110 or S114) (step S115). In addition, when the communicate mode is set up by the mode exchange key 221, the flag FLMSW which shows that the communicate mode was set up by the mode exchange key 221 is set to "1" (step S111).
[0109] Then, while the timer TM built in the control section 6 is reset (step S116), the count time amount TC is set (step S117), and the count of the time amount TC by Timer TM is started (step S118). Then, the count of the time amount TC by the above-mentioned timer TM is performed, distinguishing whether the AT command of whether facsimile mode is directed by the mode exchange key 221 and a degree was received (loop formation of steps S119-S121).
[0110] And if facsimile mode is directed by the mode exchange key 221 during the count period of the above-mentioned timer TM (it is YES at step S119), after Flag FLMSW is reset by "0" (step S123), the mode will be switched to facsimile mode (step S124), and will return to step S110.
[0111] Moreover, if the following AT command is received, without directing facsimile mode by the mode exchange key 221 (it is YES at step S120), it will judge that the AT command is transmitted continuously and will return to step S115.
[0112] Moreover, without directing facsimile mode by the mode exchange key 221 And if time amount TC is clocked by the above-mentioned timer TM, without also receiving the following AT command (it is YES at step S121) It is distinguished whether Flag FLMSW is set to "1" (step S122). If Flag FLMSW is not set to "1" (it is NO at step S122), it shifts to step S124, and the mode switches to facsimile mode

and returns to the **** step S110.
[0113] If Flag FLMSW is set to "1" (it is YESS at step S122), it will shift to step S119 and the communicate mode will be held (loop formation of steps S119-S122).
[0114] As mentioned above, whenever the mode is automatically switched to the communicate mode and it receives each AT command, he is trying to distinguish termination of the data communication from a personal computer 12 in this example, by whether the following AT command is transmitted within between [TC] 11 scheduled time, if an AT command is transmitted from a personal computer 12.
[0115] And unless facsimile mode is set up by the mode exchange key 221 when the mode is set as the communicate mode by the mode exchange key 221 while returning the mode to facsimile mode automatically, when [at which data communication was completed] distinguished, he is trying to hold the mode to the communicate mode.
[0116] As for this, an operator having set up the communicate mode specially usually by the facsimile apparatus 1 side currently left and installed from the personal computer 12 since it is thought that there is an intention that an operator wants to use the communicate mode as Maine mode -- a group, if it is made to return to facsimile mode automatically when data communication is completed It is a thing in consideration of un-arranging [which cannot be performed quickly / two or more communications processing / and smoothly] arising, and the operability in a personal computer 12 falling. When facsimile mode is set up by the mode exchange key 221, priority is given to an intention of the above-mentioned operator, and a return in facsimile mode is enabled and it is made for above-mentioned un-arranging not to arise only by the mode exchange key 221.
[0117] In addition, in the flow chart of drawing 13 , although the case of an AT command system was explained, other command systems can perform same control.
[0118]
[Effect of the Invention] As explained above, according to this invention, connection of a communication device should make it possible. It is facsimile apparatus equipped with the communicate mode which communicates data between these communication devices. When the above-mentioned communicate mode is set up based on the command data which direct the mode setting from the above-mentioned communication device Discharge of the communicate mode is enabled based on the command data which direct the mode discharge directions from a directions means, or the mode discharge from the above-mentioned communication device. When the above-mentioned communicate mode is set up by the mode setting directions from a directions means Since the discharge of the communicate mode based on the command data which direct the above-mentioned mode discharge was forbidden and discharge of the communicate mode was enabled only with the mode discharge directions from a directions means The availability of the communicate mode improves by setting the mode of facsimile apparatus as the communicate mode fixed with a directions means.
[0119] Moreover, since it points to discharge of the communicate mode with a directions means, and the communicate mode is held as long as there is nothing, two or more communications processing which can be set to the communicate mode can be performed quickly and smoothly.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to the facsimile apparatus connected with communication devices, such as a personal computer, possible [a communication link] through a modem interface.

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PRIOR ART

[Description of the Prior Art] In recent years, the so-called FAX modem which can transmit the data on a personal computer to the facsimile apparatus of a remote place through the telephone line can be commercialized, and a facsimile function can be added now to personal computer communications (henceforth personal computer communications) by connecting a personal computer to the telephone line through this FAX modem.
[0003] On the other hand in facsimile apparatus, it has the memory which memorizes a transmitted and received data, and the facsimile apparatus in which intercepting by this memory is possible is commercialized. Since the facsimile apparatus with which the conventional facsimile apparatus was equipped with the above-mentioned memory although use of received data was restricted since received data were outputted to the detail paper on real time can save a transmitted and received data in memory, its availability of a transmitted and received data improves, and it has possibility of enriching the extension of facsimile apparatus.
[0004] If especially facsimile apparatus is equipped with communication facility and a personal computer can be connected possible [a communication link], it will become possible to operate facsimile apparatus as the above-mentioned FAX modem or a printer to a personal computer, and conventionally, facsimile apparatus equipped with this communication facility is not known, and commercialization is not carried out, either.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, connection of a communication device should make it possible. It is facsimile apparatus equipped with the communicate mode which communicates data between these communication devices. When the above-mentioned communicate mode is set up based on the command data which direct the mode setting from the above-mentioned communication device Discharge of the communicate mode is enabled based on the command data which direct the mode discharge directions from a directions means, or the mode discharge from the above-mentioned communication device. When the above-mentioned communicate mode is set up by the mode setting directions from a directions means Since the discharge of the communicate mode based on the command data which direct the above-mentioned mode discharge was forbidden and discharge of the communicate mode was enabled only with the mode discharge directions from a directions means The availability of the communicate mode improves by setting the mode of facsimile apparatus as the communicate mode fixed with a directions means.
[0119] Moreover, since it points to discharge of the communicate mode with a directions means, and the communicate mode is held as long as there is nothing, two or more communications processing which can be set to the communicate mode can be performed quickly and smoothly.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, how to connect a personal computer to facsimile apparatus possible [a communication link] through the above-mentioned RC-232C interface can be considered by equipping facsimile apparatus with for example, a RC-232C interface and the software corresponding to an AT command.
[0006] Since a facsimile function and personal computer communication facility are functions which became independent fundamentally when communication facility is added to facsimile apparatus, it is desirable to form the mode change-over switch which switches the mode (henceforth facsimile mode) in which the usual facsimile function is achieved, and the mode (henceforth the communicate mode) in which the above-mentioned personal computer communications are performed to the control unit of facsimile apparatus.
[0007] On the other hand, the communicate mode is the extension for supporting a personal computer, and since it is considered submode to facsimile mode, it is considered [interrupting during facsimile mode setting and being used temporarily in many cases, and]. If the mode change-over is attained only with the above-mentioned mode change-over switch in this case, it must carry out to the facsimile apparatus arranged in the location comparatively distant to the personal computer, a mode change-over must be performed, and the operability of a mode change-over will fall remarkably.
[0008] Therefore, also when operability is taken into consideration, and the AT command transmitted from a personal computer is received, it is desirable for the mode change-over between facsimile mode and the communicate mode to be made to be performed. For example, if an AT command is received in facsimile mode, while switching to the communicate mode automatically and enabling interruption of communications processing, after required communications processing is completed, it is made to return to facsimile mode automatically.
[0009] However, if a mode change-over is attained by both command reception from directions by the mode change-over switch, and a personal computer, the mode will be automatically switched against an intention of an operator and the case where availability falls will arise. When the mode switches automatically by command reception from a personal computer in this case, it becomes impossible for example, to carry out quickly [communications processing] and smoothly, since an operator is considered that there is an intention to use facsimile apparatus fixed as a peripheral device of a personal computer when the communicate mode is set up by the mode change-over switch of facsimile apparatus.

[0010] This invention is made in view of the above-mentioned background and a technical problem, a setup of the communicate mode is enabled fixed, and it aims at offering the facsimile apparatus which can be performed quickly [the communications processing by the communicate mode], and smoothly.

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MEANS

[Means for Solving the Problem] A directions means to be facsimile apparatus equipped with the communicate mode which connection of a communication device is attained for this invention, and communicates data between these communication devices, and to direct a setup/discharge of the above-mentioned communicate mode, A communicate mode setting means to set up the above-mentioned communicate mode based on the command data which direct the mode setting directions from the above-mentioned directions means, or the mode setting from the above-mentioned communication device, A communicate mode discharge means to cancel the above-mentioned communicate mode based on the command data which direct the mode discharge directions from the above-mentioned directions means, or the mode discharge from the above-mentioned communication device, A distinction means to distinguish whether the above-mentioned communicate mode was set up by the above-mentioned directions means, and when the above-mentioned communicate mode is set up by the above-mentioned directions means It has a mode discharge prohibition means to forbid the discharge of the above-mentioned communicate mode based on the command data which direct the mode discharge from the above-mentioned communication device.

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OPERATION

[Function] According to this invention, connection of a communication device is attained for facsimile apparatus, and the communication link of data is performed in the communicate mode between the communication devices by which external connection was made. The discharge of the communicate mode based on the command data which direct the mode discharge from the above-mentioned communication device is forbidden, and the above-mentioned communicate mode is canceled by only the mode discharge directions from a directions means, when set up by the mode setting directions from a directions means. Moreover, when the communicate mode is set up based on the command data which direct the mode setting from the above-mentioned communication device, it is canceled based on the command data which direct the communicate mode discharge directions from a directions means, or the mode discharge from the above-mentioned communication device.

[Translation done.]

* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block block diagram of the facsimile apparatus concerning this invention.
[Drawing 2] It is drawing showing an example of the control unit prepared in the control panel of the facsimile apparatus concerning this invention, and a display.
[Drawing 3] It is the circuit diagram of the connection checking circuit which checks the connection condition of a personal computer.
[Drawing 4] It is a timing diagram for explaining actuation of a connection checking circuit.
[Drawing 5] It is the flow chart which performs the abnormality check in connection of the personal computer 12 when the communicate mode is set up.
[Drawing 6] It is drawing showing the example of a display of the warning message of the abnormalities in connection.
[Drawing 7] It is the flow chart which checks the abnormalities in connection of the personal computer under communicate mode setup.
[Drawing 8] It is the flow chart which checks the abnormalities in connection of a personal computer periodically during the setting period of the communicate mode.
[Drawing 9] It is the flow chart which shows the registration processing in communications-partner register mode.
[Drawing 10] It is the flow chart which shows the registration processing in cryptographic key register mode.
[Drawing 11] It is the flow chart which shows transmitting processing of the data in facsimile mode.
[Drawing 12] It is the flow chart which shows the reception of the data in facsimile mode.
[Drawing 13] It is the flow chart which shows the mode change-over control between facsimile mode and the communicate mode.
[Description of Notations]
1 Facsimile Apparatus
2 Scanner Section
3 Printer Section
4 Data-Processing Section
401 Memory
402 Compression/Expanding Circuit
403 Encryption / Plaintext-ized Circuit
404 Data-Processing Circuit
5 Data Transmission Section
501 Modem
502 NCU
6 Control Section
601 Data Buffer
602 ROM

603 RAM
7 RS-232C Interface
8 Command Switch
9 Control Unit
10 Display
11 Loudspeaker
12 Personal Computer
13 Telephone Line
14 Facsimile (FAX)
15 Control Panel
16 One-touch Key
17 Annunciator
18 Plotting Board
19 Loudspeaker Aperture
20 Selection Key
21 Ten Key
22 Function Key
23 Start/Stop Key
25 RS Receiver
26 Gate Circuit
27 D-FF
28 CPU

[Translation done.]

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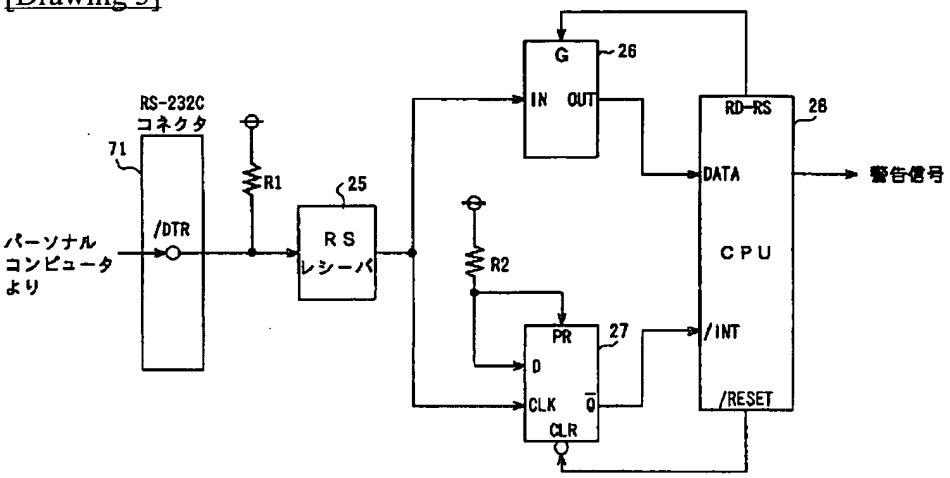
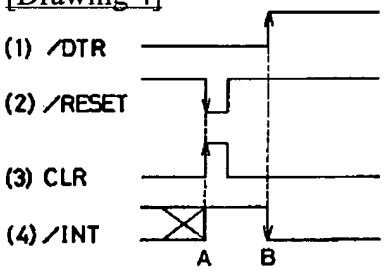
DRAWINGS

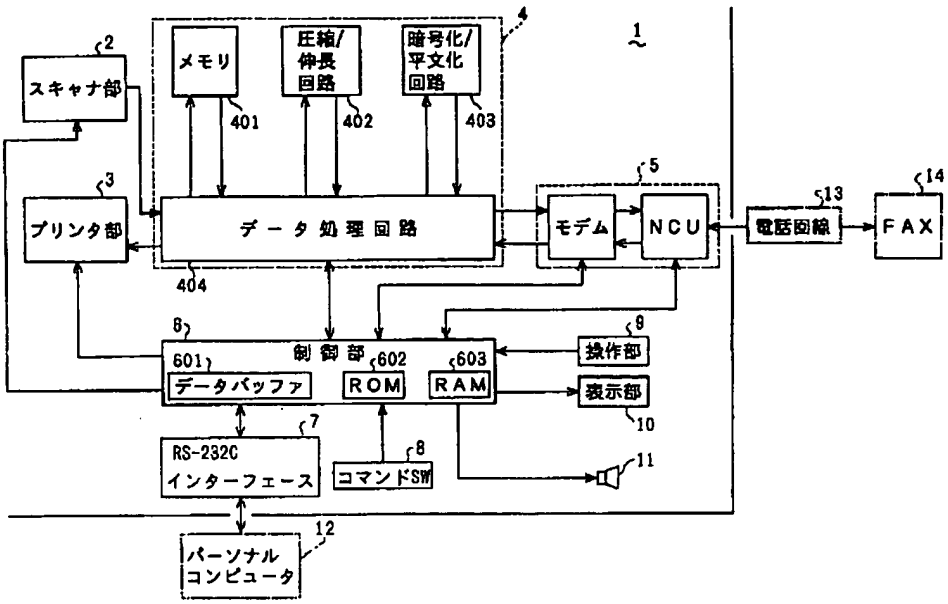
[Drawing 3]



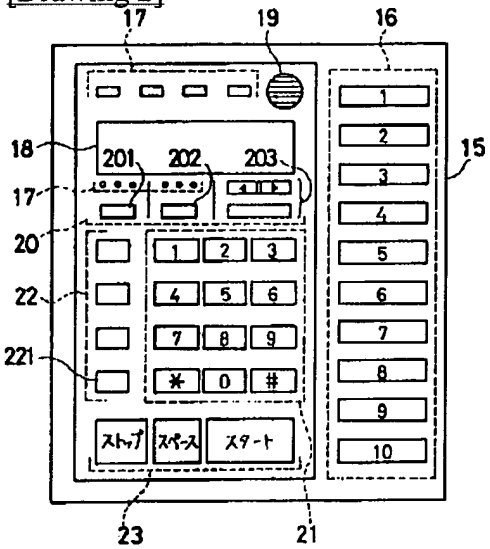
[Drawing 4]



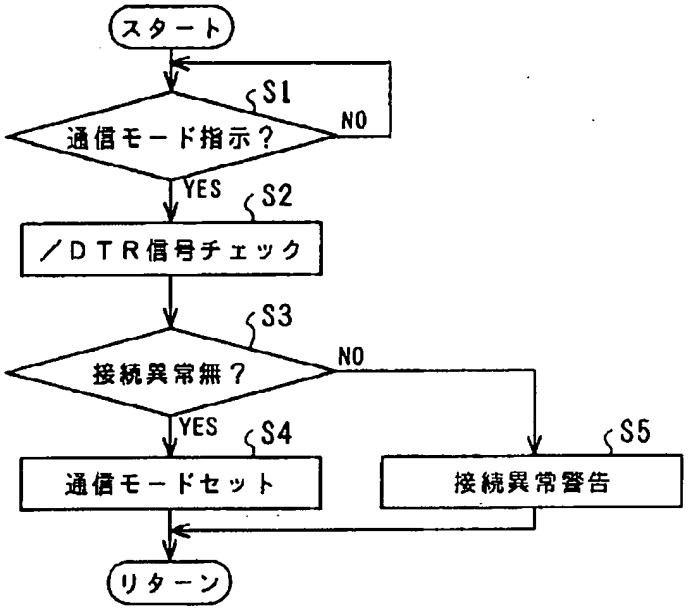
[Drawing 1]



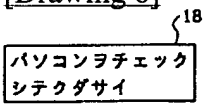
[Drawing 2]



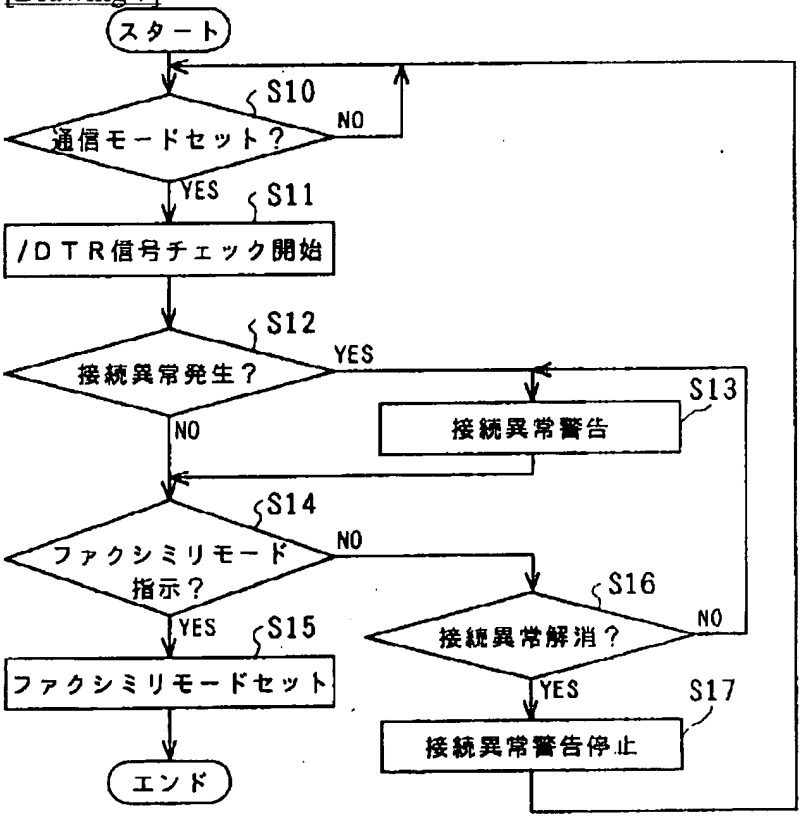
[Drawing 5]



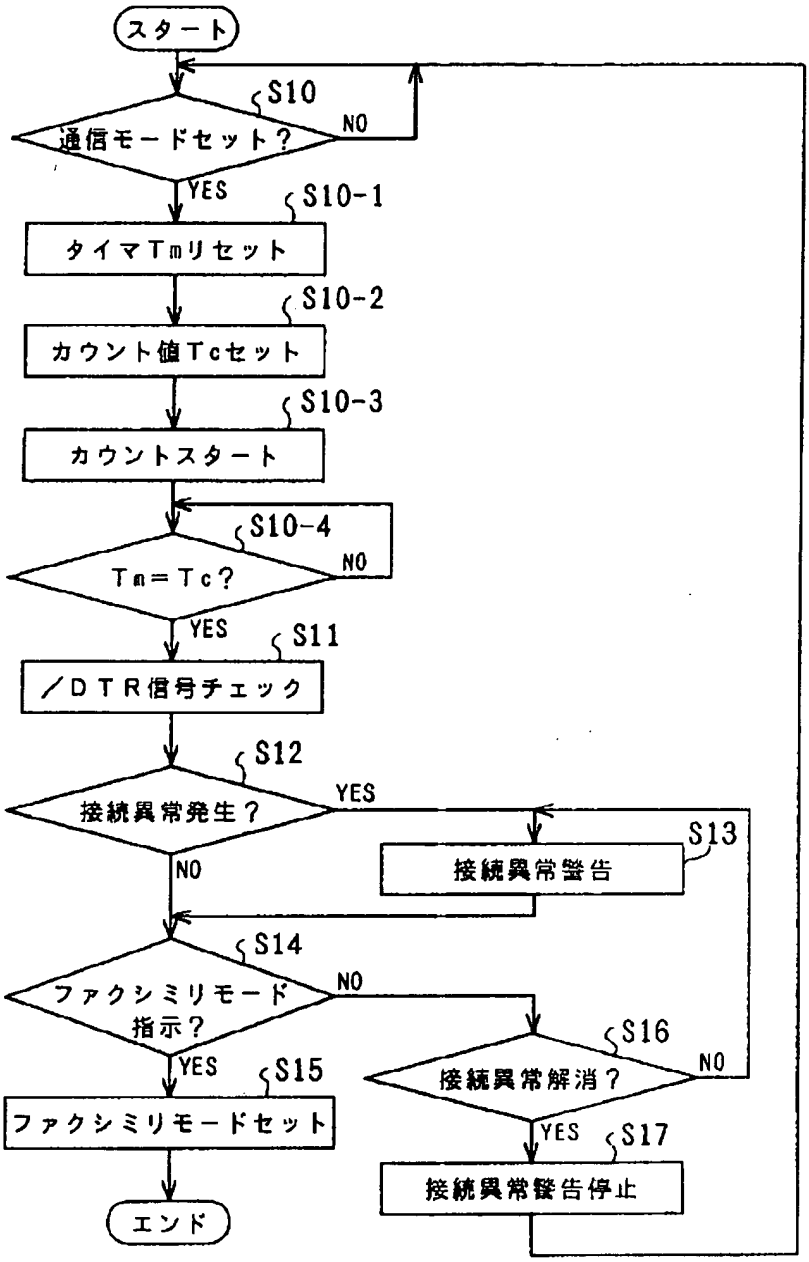
[Drawing 6]



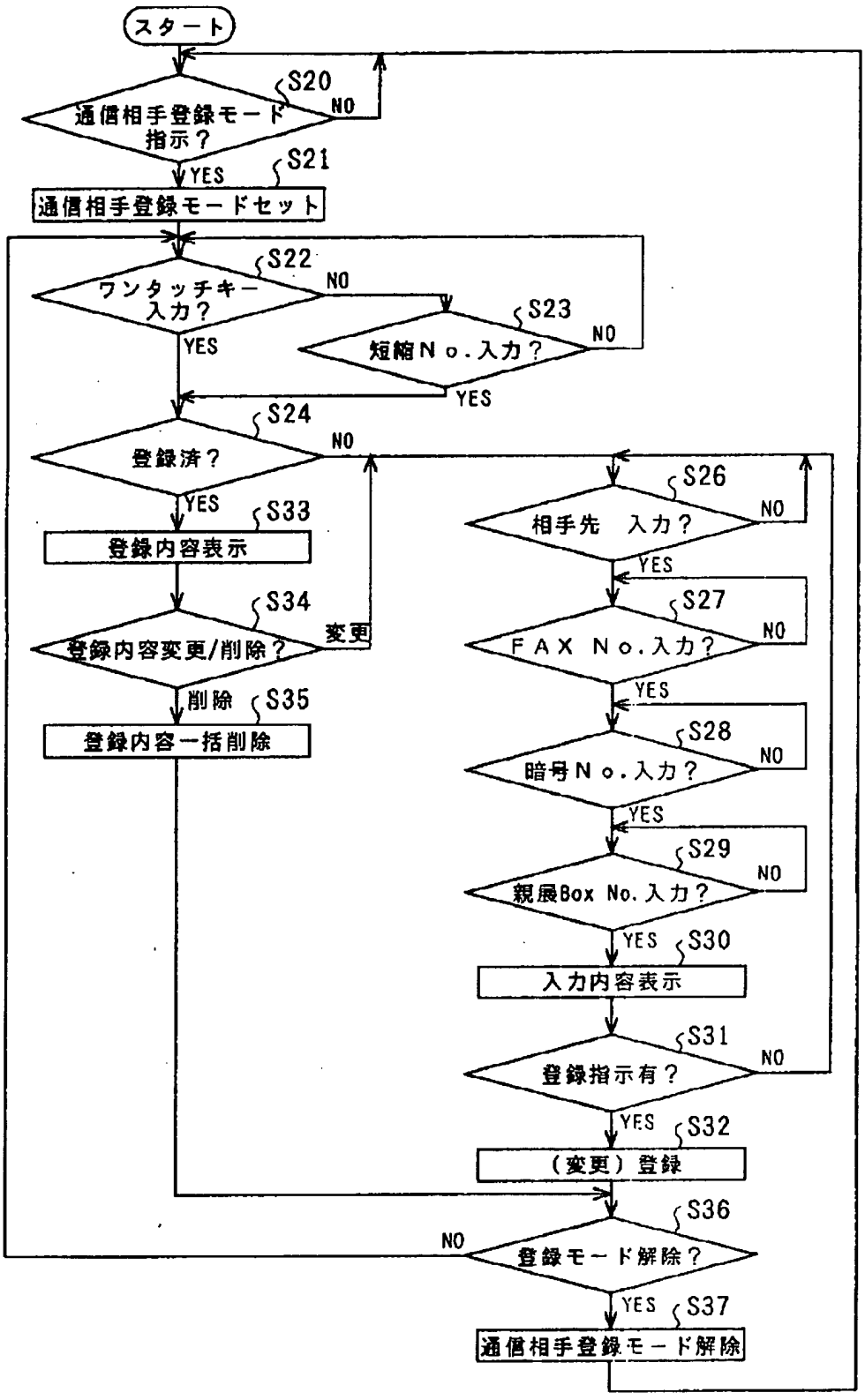
[Drawing 7]



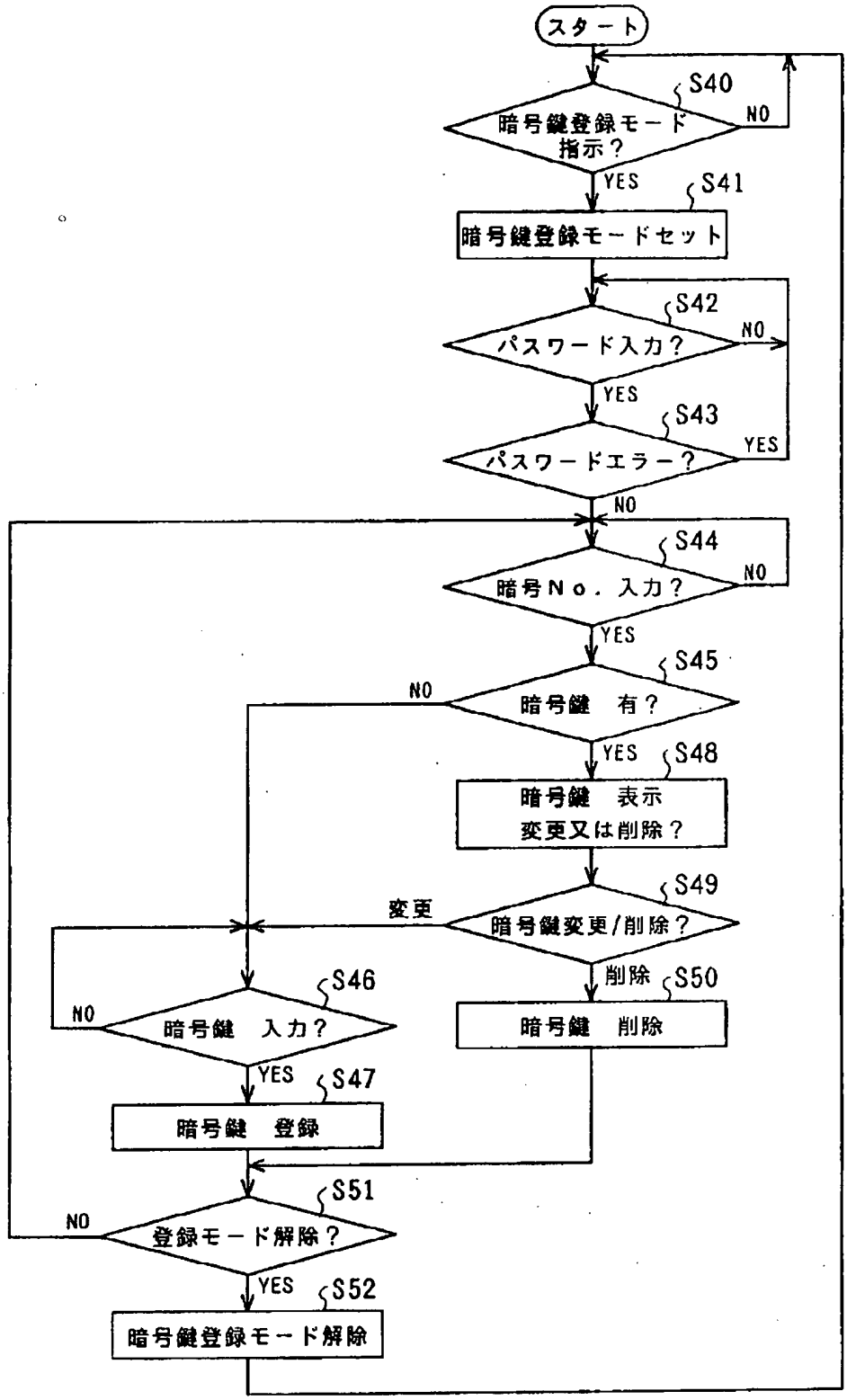
[Drawing 8]


スタート
S10
通信モードセット？
NO
YES
S10-1
タイマTmリセット
S10-2
カウント値Tcセット
S10-3
カウントスタート
S10-4
Tm＝Tc？
NO
YES
S11
／DTR信号チェック
S12
接続異常発生？
YES
NO
S13
接続異常警告
S14
ファクシミリモード指示？
NO
YES
S15
ファクシミリモードセット
エンド
S16
接続異常解消？
NO
YES
S17
接続異常警告停止

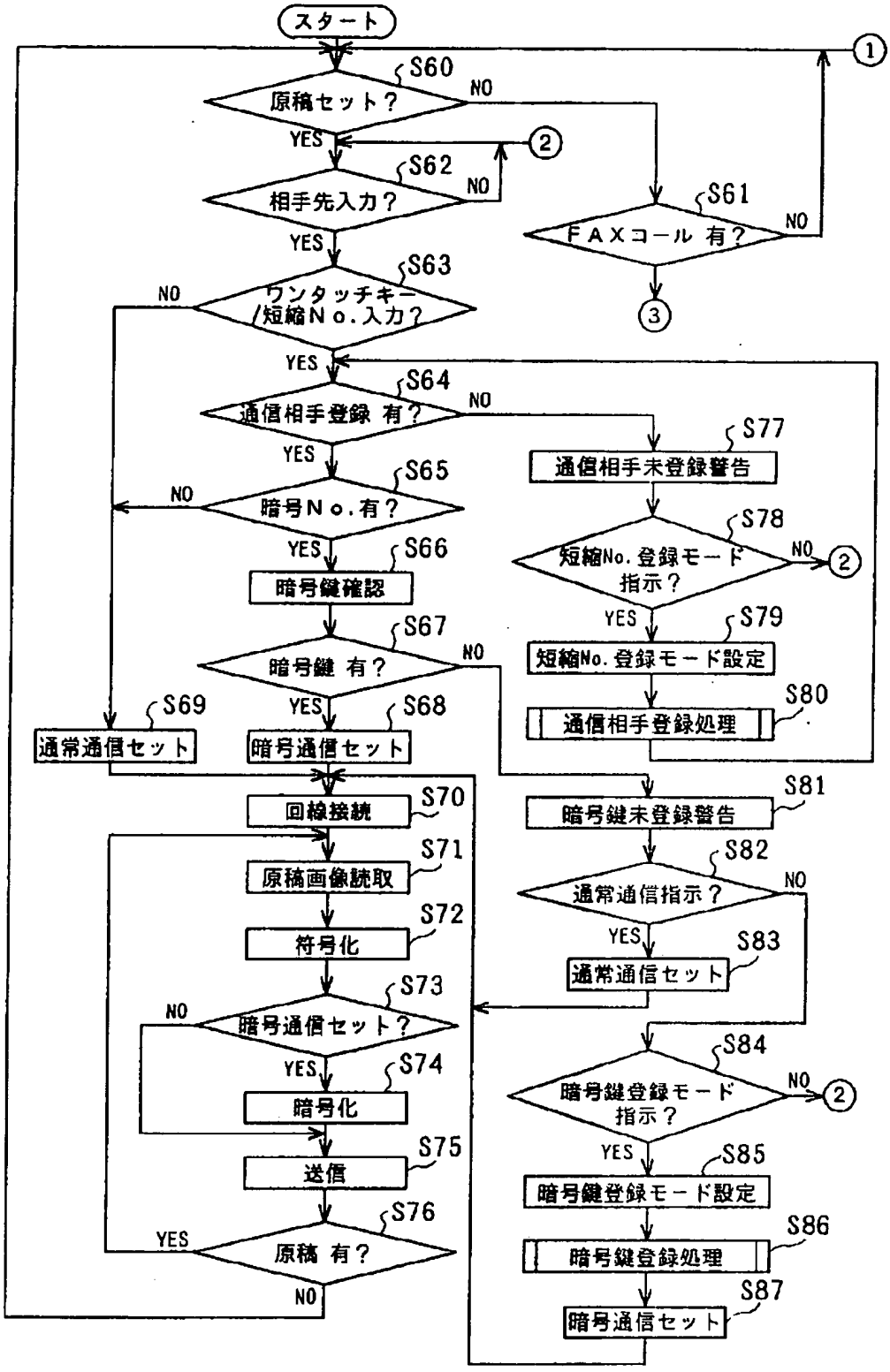
[Drawing 9]


スタート
S20
通信相手登録モード指示？
NO
YES
S21
通信相手登録モードセット
S22
ワンタッチキー入力？
NO
YES
S23
短縮No.入力？
NO
YES
S24
登録済？
NO
YES
S33
登録内容表示
S34
登録内容変更/削除？
変更
削除
S35
登録内容一括削除
S26
相手先　入力？
NO
YES
S27
FAX No.入力？
NO
YES
S28
暗号No.入力？
NO
YES
S29
親展Box No.入力？
NO
YES
S30
入力内容表示
S31
登録指示有？
NO
YES
S32
（変更）登録
S36
登録モード解除？
NO
YES
S37
通信相手登録モード解除

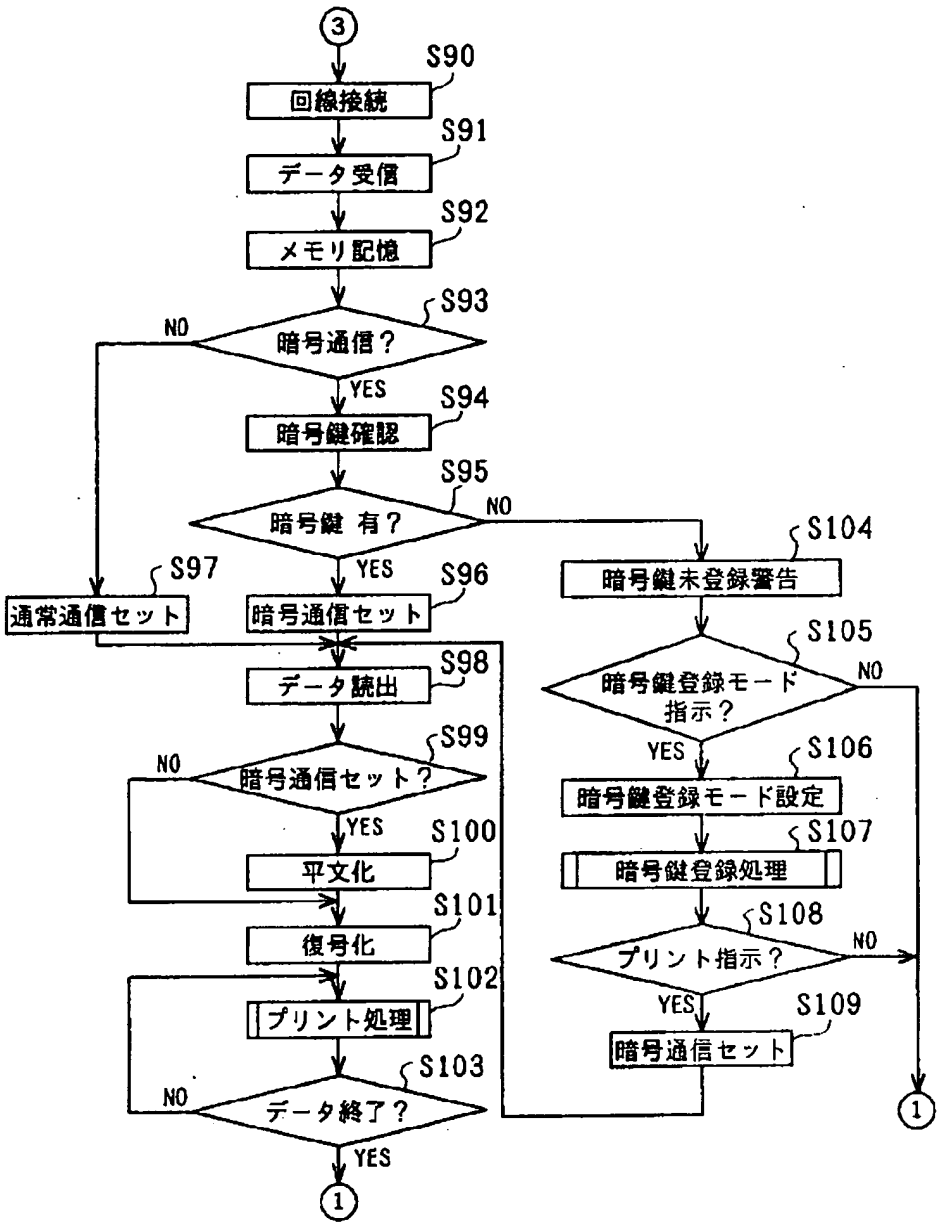
[Drawing 10]


スタート
S40
暗号鍵登録モード指示？
NO
YES
S41
暗号鍵登録モードセット
S42
パスワード入力？
NO
YES
S43
パスワードエラー？
YES
NO
S44
暗号Ｎｏ．入力？
NO
YES
S45
暗号鍵　有？
NO
YES
S48
暗号鍵　表示
変更又は削除？
S49
暗号鍵変更/削除？
変更
削除
S50
暗号鍵　削除
S46
暗号鍵　入力？
NO
YES
S47
暗号鍵　登録
S51
登録モード解除？
NO
YES
S52
暗号鍵登録モード解除

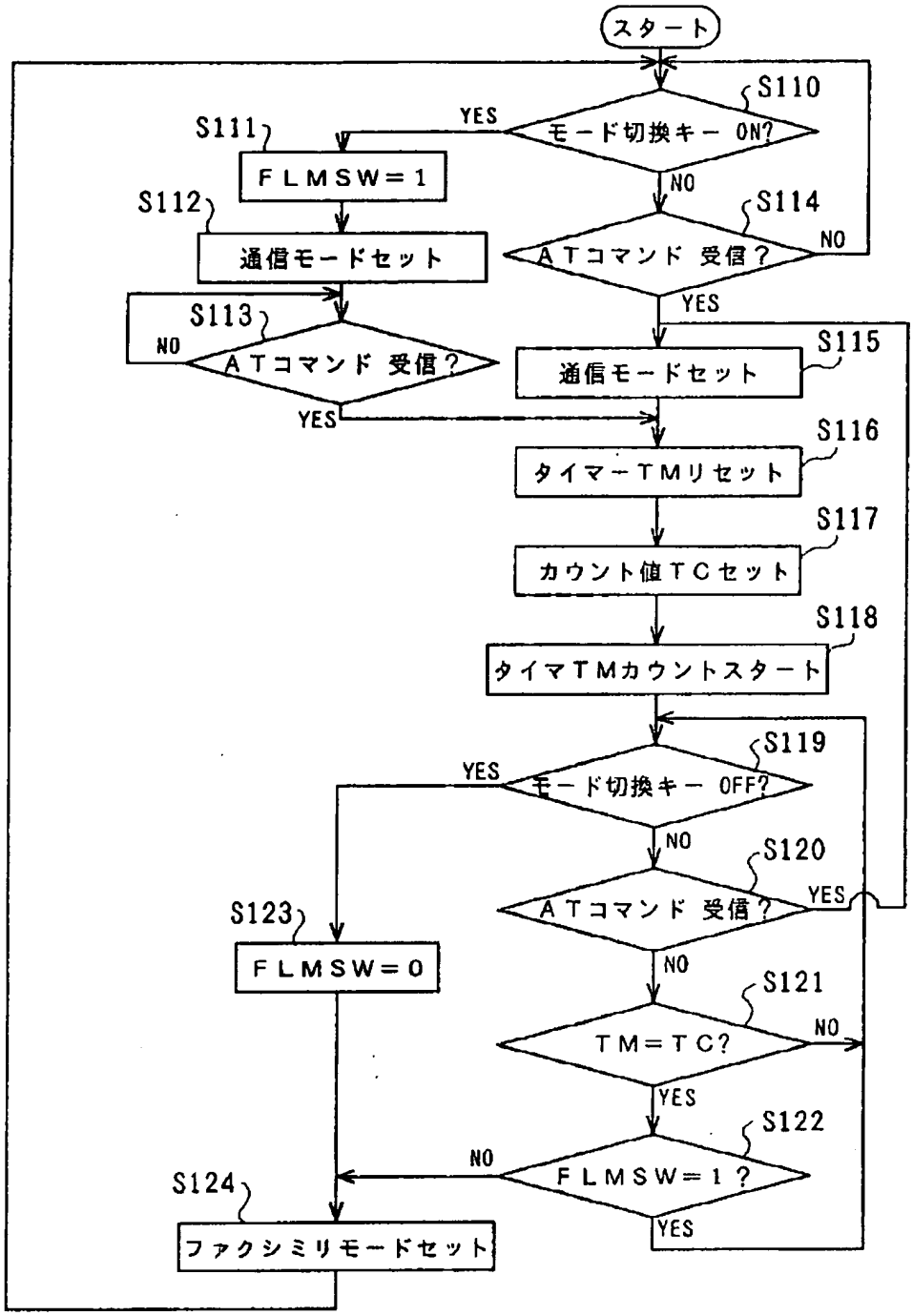
[Drawing 11]


スタート
S60
原稿セット？
NO
YES
S62
相手先入力？
NO
YES
S61
ＦＡＸコール 有？
NO
S63
ワンタッチキー/短縮Ｎｏ.入力？
NO
YES
S64
通信相手登録 有？
NO
YES
S77
通信相手未登録警告
S65
暗号Ｎｏ.有？
NO
YES
S78
短縮No.登録モード指示？
NO
YES
S66
暗号鍵確認
S79
短縮No.登録モード設定
S67
暗号鍵 有？
NO
YES
S80
通信相手登録処理
S69
通常通信セット
S68
暗号通信セット
S81
暗号鍵未登録警告
S70
回線接続
S82
通常通信指示？
NO
YES
S71
原稿画像読取
S83
通常通信セット
S72
符号化
S73
暗号通信セット？
NO
YES
S84
暗号鍵登録モード指示？
NO
YES
S74
暗号化
S85
暗号鍵登録モード設定
S75
送信
S86
暗号鍵登録処理
S76
原稿 有？
YES
NO
S87
暗号通信セット
①
②
③

[Drawing 12]


3
S90
回線接続
S91
データ受信
S92
メモリ記憶
S93
暗号通信？
NO
YES
S94
暗号鍵確認
S95
暗号鍵 有？
NO
YES
S104
暗号鍵未登録警告
S97
通常通信セット
S96
暗号通信セット
S105
暗号鍵登録モード指示？
NO
YES
S98
データ読出
S106
暗号鍵登録モード設定
S99
暗号通信セット？
NO
YES
S107
暗号鍵登録処理
S100
平文化
S108
プリント指示？
NO
YES
S101
復号化
S109
暗号通信セット
S102
プリント処理
S103
データ終了？
NO
YES
1
1

[Drawing 13]



[Translation done.]